BOEING

Expeditionary Warfare Conference

30 Oct 01

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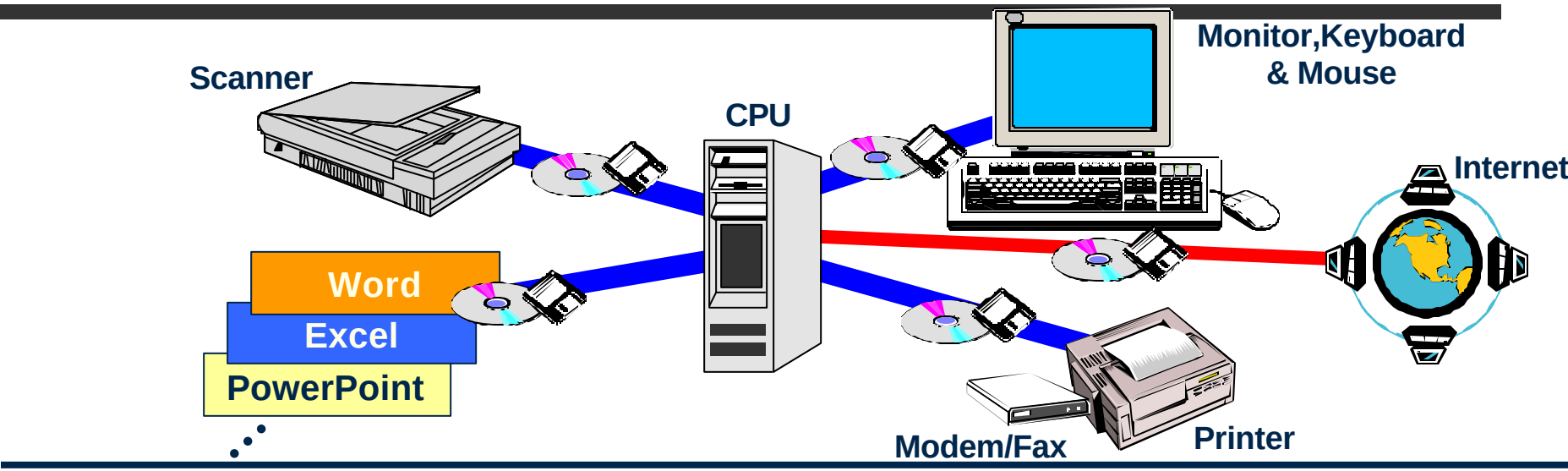
Vice President, Program Director
V-22 Joint Program Office

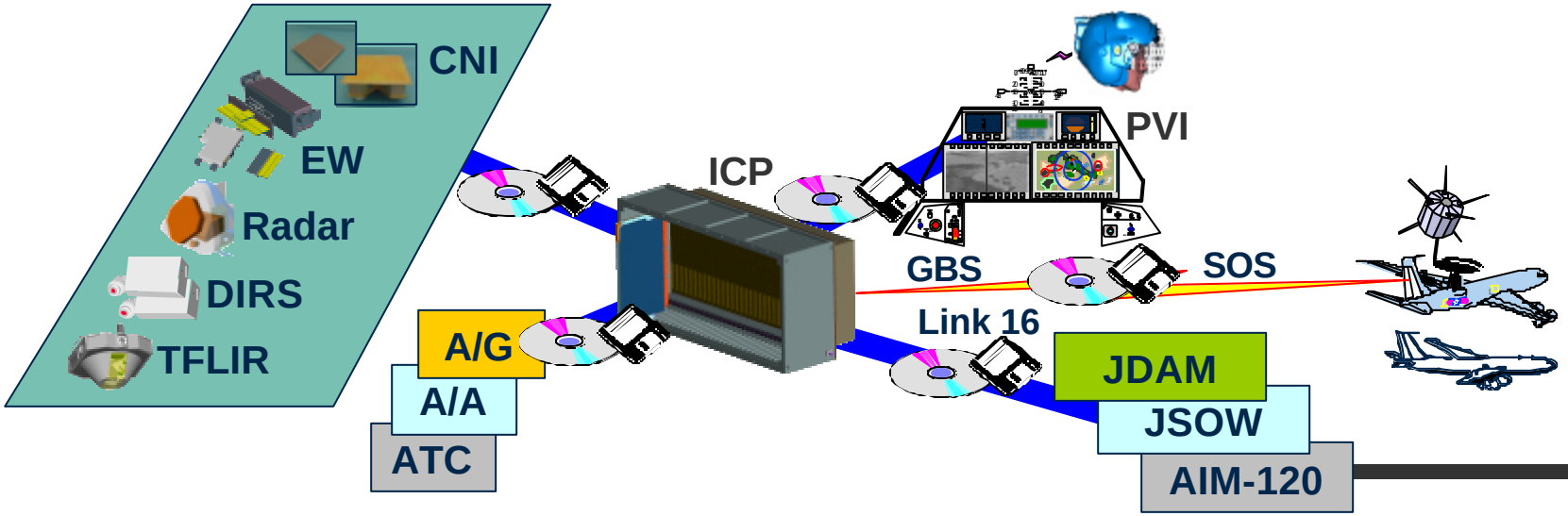
Creation of Open System Architecture

- Goal of Open System Architecture (OSA)
  - Allow Our Software Based Warfighting Systems to Maintain Maximum Capability Currency

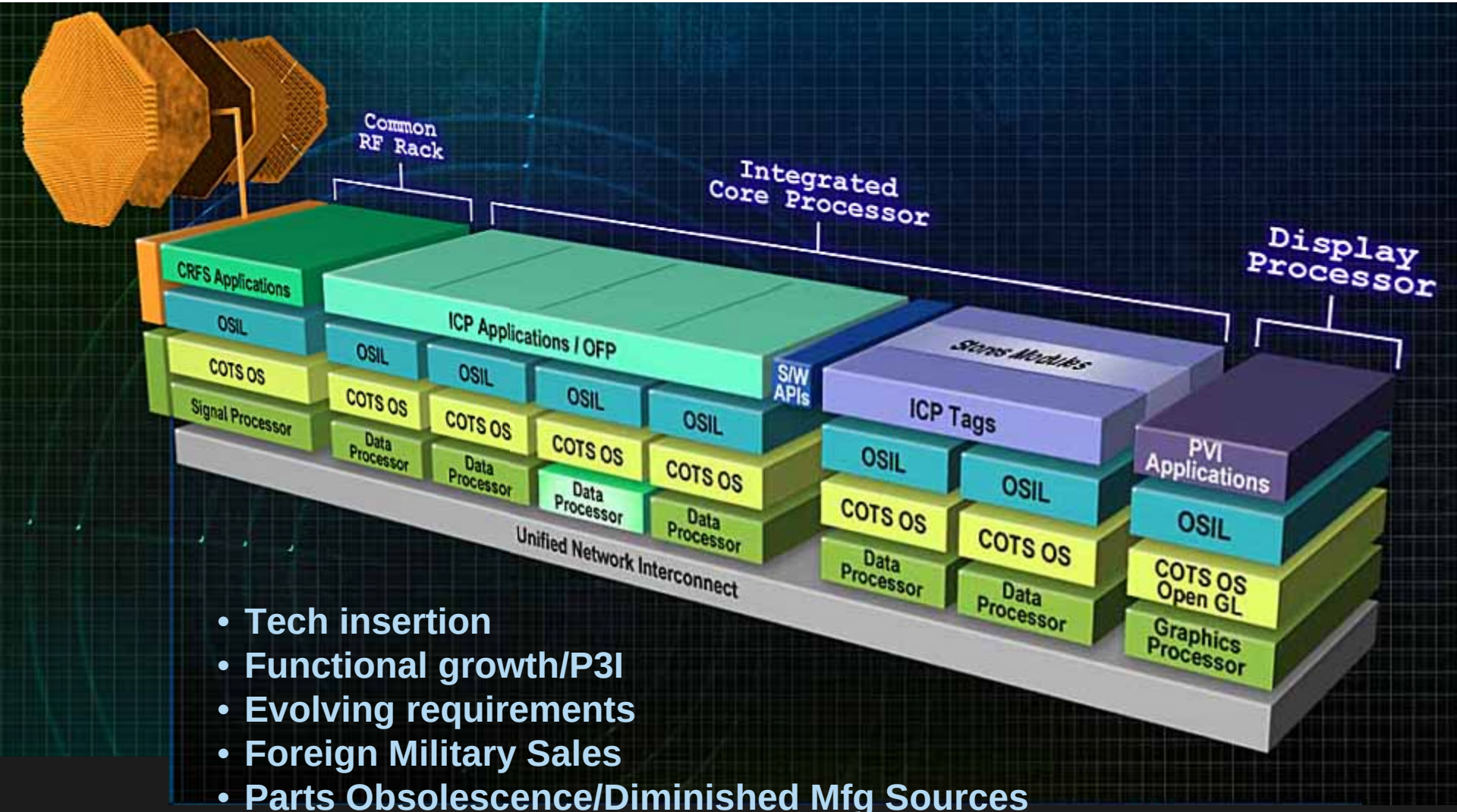
- Why OSA
  - Ability to Respond Quickly to Changing:
    - Threat Capability
    - Processing Capability
  - Need to Reduce Life Cycle Cost
    - Aircraft Platforms Need Support 30+ Years
    - Reduced Defense Budgets
    - Reduced Electronics Industry Cycle Time

OSA: The PC Analogy





A Layered Approach



- Tech insertion
- Functional growth/P3I
- Evolving requirements
- Foreign Military Sales
- Parts Obsolescence/Diminished Mfg Sources

Makes "Plug and Fight" Concept a Reality

Examples of Open System Architecture

- Platforms that are designed with OSA considerations
  - JSF
  - RAH-66
- Existing Platforms Migrating to OSA
  - F/A-18 Advanced Mission Computers and Displays (AMCD)
  - AV-8B Open Systems Core Avionics Requirement (OSCAR)
  - F-15 Advanced Display Core Processor (ADCP)
  - C-130 Avionics Modernization Program (AMP)
- Existing Platforms Considering OSA
  - V-22
  - C-17
  - AH-64
  - T-45

Requirements and Open System Architecture

Government and Industry Must Adopt a Cooperative Approach That

- **Allows Use of Industry Standards**
- **Defines Mutually Acceptable Requirements Thresholds for Updates**
- **Depends on Development of Non-Proprietary Application Program Interfaces (API)**
- **Creates/Adopts Government Industry Qualification Standards**

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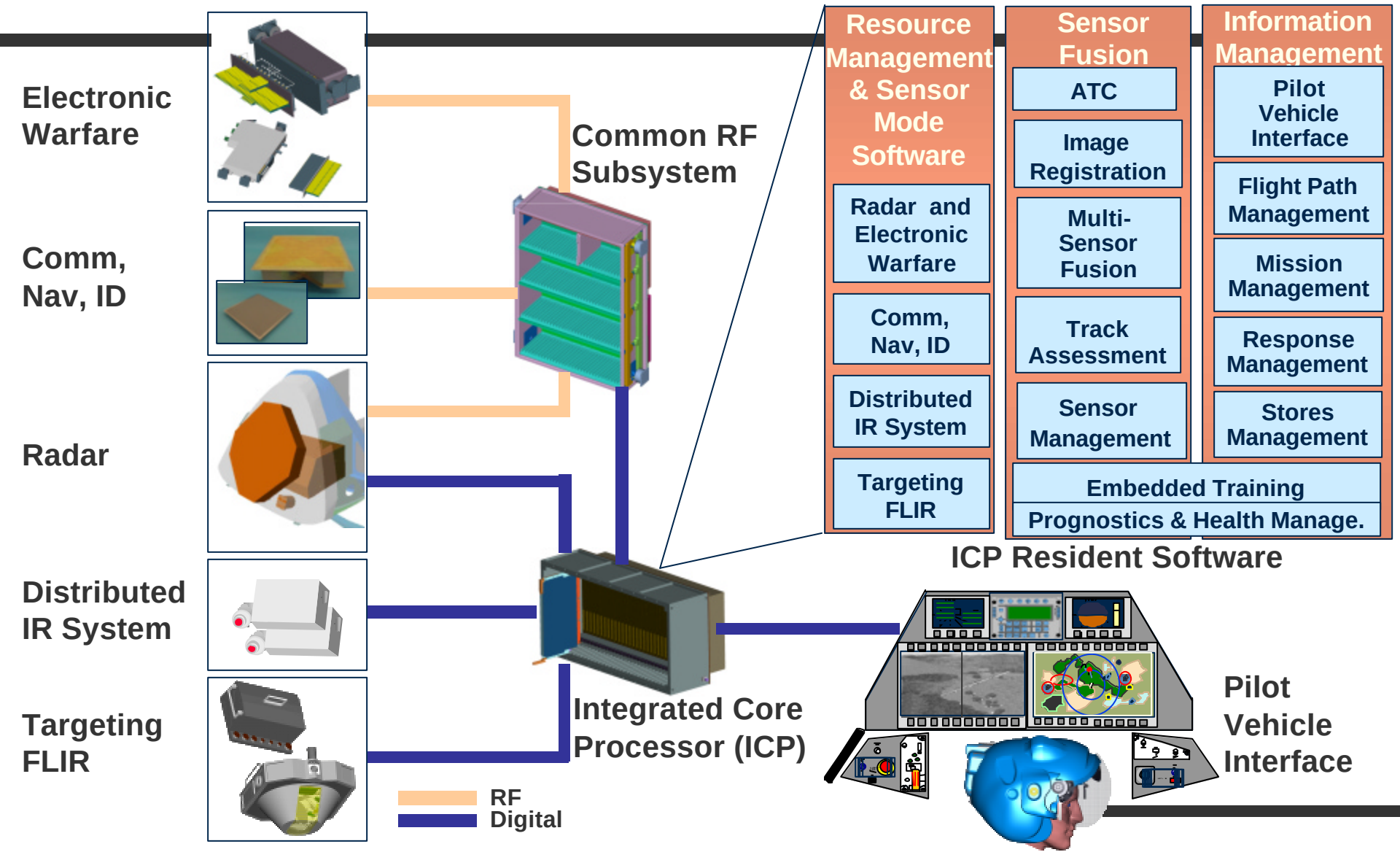
Open System Architecture

BACKUP
VUFOILS

Typical OSA Mission System Architecture



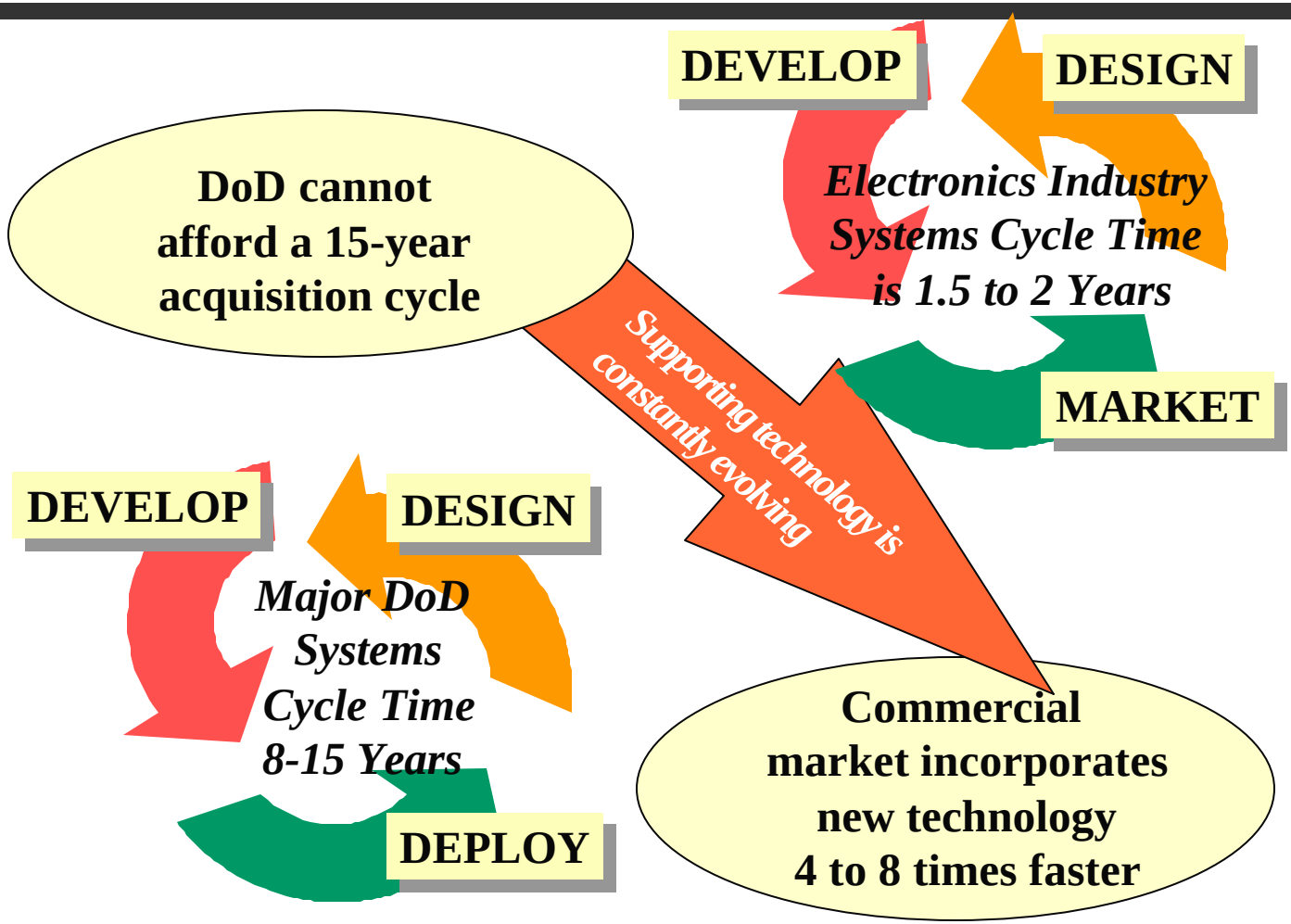
Benefits of Open System Architecture

- Reduces Development Time for Mission System Updates
  - Only Changing a Layer
  - More Timely Changes
  - Planned Obsolescence Mitigation
- Reduced Life Cycle Cost
  - Increased Competition / Supplier Base
  - Reduced Recurring Costs (COTS Technology)
  - Easier Technology Insertion
  - Leverage Development Across Platforms
  - Reduced NRE
- Better Performance
  - Leverage Best COTS / Industry Technology
- Enhances Commonality Across Various Mission Systems

Creation of Open System Architecture

- What is Open System Architecture (OSA)
  - Counters the Historic Highly Coupled Design Methods
  - Uses Industry Recognized Standards
  - Creates a Layered System
  - Provides Provisions for Expansion or Upgrade with Minimal Impact to the Other Layers in the System

The Problem Driving Open Systems...



Extracted from the *Open Systems - Joint Task Force* website

What is an “Open System” *

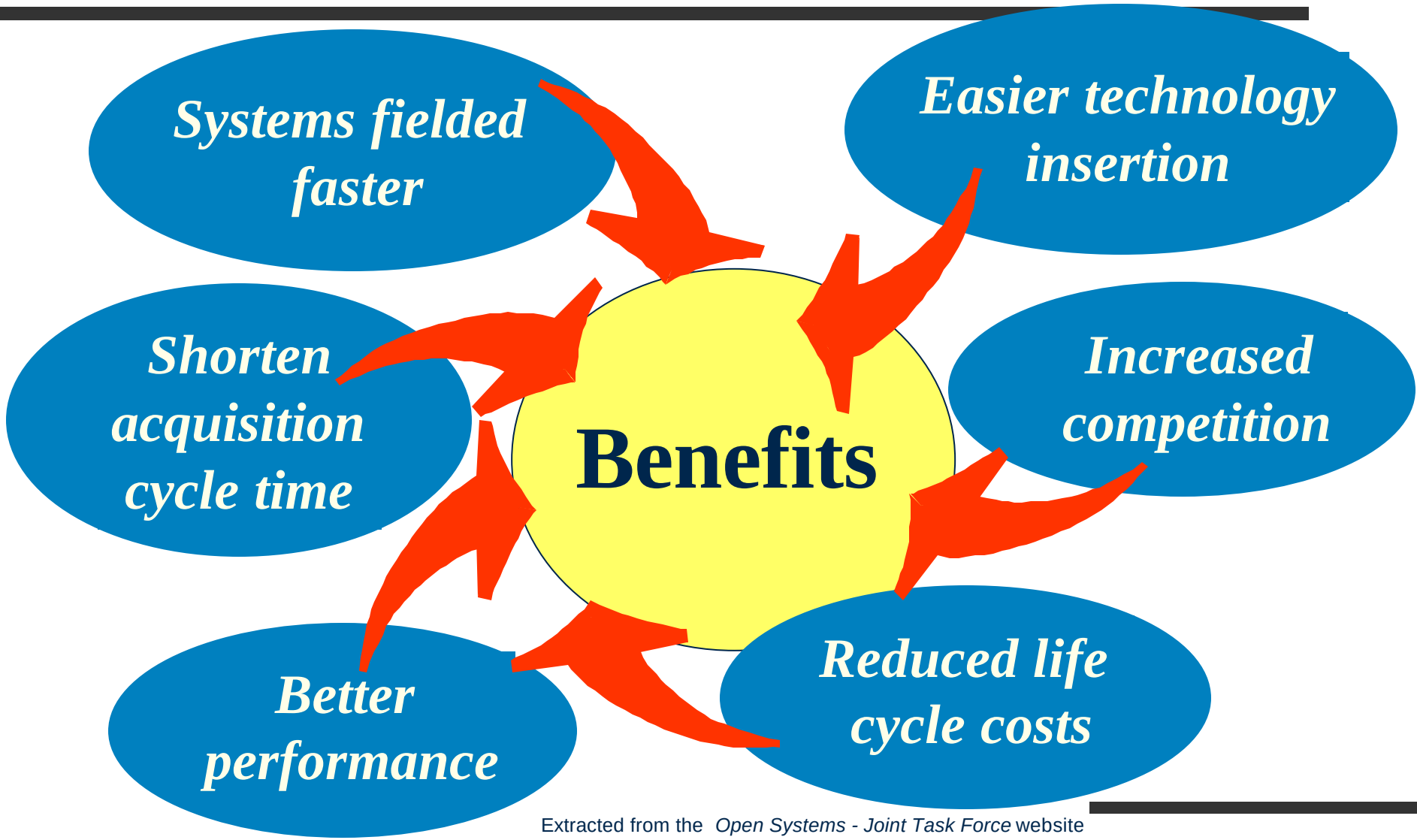
"A system that implements sufficient open specifications for interfaces, services, and supporting formats to enable properly engineered components to be utilized across a wide range of systems with minimal changes…

An open system is characterized by the following: "

- Well Defined, Widely Used, Non-Proprietary Interfaces/Protocols, and
- Use of Standards Which Are Developed/Adopted by Industrially Recognized Standards Bodies, and
- Definition of all Aspects of System Interfaces to Facilitate New or Additional Systems Capabilities for a Wide Range of Applications, and
- Explicit Provision for Expansion or Upgrading Through the Incorporation of Additional or Higher Performance Elements With Minimal Impact to the System.

** IEEE POSIX 1003.0/D15 as Modified by the Tri-Service Open Systems Architecture Working Group, November 1995*

Benefits of Using Open Systems



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